

What is claimed is:

1. A method of inspecting a pattern, comprising the steps of:

sensing images of corresponding areas of two patterns, which are originally formed so as to have an identical shape on a substrate, to obtain a reference image and an inspection image;

with respect to the reference image and the inspection image obtained by sensing images of the areas, performing correction of a difference of brightness for corresponding each first unit area and a difference of brightness for each second unit area larger than the first unit area; and

detecting a defect using the reference image and the inspection image for which the correction of brightness for each first unit area and the correction of brightness for each second unit area are performed.

2. A method of inspecting a pattern according to claim 1, wherein a difference of brightness which occurs in a belt shape in the reference image and the inspection image according to the correction of brightness for each first unit area is corrected, and a difference of brightness which occurs at random in the reference image and the inspection image according to the correction of brightness for each second unit area is corrected.

3. A method of inspecting a pattern, comprising the steps

of:

sensing images of corresponding areas of two patterns, which are formed so as to originally have an identical shape on a substrate, to obtain a reference image and an inspection image;

correcting a difference of brightness between the reference image and the inspection image obtained by sensing images of the areas in multiple stages by different area unit;

comparing the images for which brightness is corrected in multiple stages to find a difference image between both the images; and

comparing the difference image with a threshold value corresponding to the areas of the images to detect a defect.

4. A method of inspecting a pattern according to claim 3, wherein the correction of brightness in multiple stages is performed by changing a size of a unit area for which brightness correction is performed on the images.

5. A method of inspecting a pattern according to claim 3, wherein a positional deviation between the reference image and the inspection image obtained sensing images of the areas is corrected, and a difference of brightness between corresponding parts of the reference image and the inspection image, for which positional deviation is corrected, is corrected in multiple stages by different area units.

6. A method of inspecting a pattern according to claim 3,

wherein the threshold value according to the areas of the images is a threshold value corresponding to a difference of partial brightness of the images.

7. A method of inspecting a pattern, comprising the steps of:

sequentially sensing images of corresponding areas of two patterns, which are originally formed so as to have an identical shape on a substrate, using an image sensor to sequentially capture images of the corresponding areas; and

performing correction of positional deviation, correction of brightness, and detection of a defect by parallel processing with respect to the images subsequently captured by sensing images of the areas with the image sensor,

wherein the images are processed at a processing speed substantially equal to an image capturing speed of the image sensor.

8. A method of inspecting a pattern according to claim 7, wherein the speed for processing the images is in the range of 1.6 Gpps to 6.4 Gpps.

9. An apparatus for inspecting a pattern, comprising:

image sensing means which senses images of corresponding areas of two patterns, which are originally formed so as to have an identical shape on a substrate; and

image processing means which uses the reference image and the inspection image, which are obtained by sensing images

of the areas with the image sensing means, to detect a defect,

wherein the image processing means comprises:

a brightness correction unit which, with respect to the reference image and the inspection image obtained by sensing images of the areas, performs correction of a difference of brightness for corresponding each first unit area and a difference of brightness for each second unit area larger than the first unit area; and

a defect detection unit which detects a defect using the reference image and the inspection image for which the correction of brightness for each first unit area and the correction of brightness for each second unit area are performed by the brightness correction unit.

10. An apparatus for inspecting a pattern according to claim 9,

wherein the brightness correction unit corrects a difference of brightness which occurs in a belt shape in the reference image and the inspection image according to the correction of brightness for each first unit area, and a difference of brightness which occurs at random in the reference image and the inspection image according to the correction of brightness for each second unit area.

11. An apparatus for inspecting a pattern, comprising:

image sensing means which senses images of corresponding areas of two patterns, which are originally formed so as to

have an identical shape on a substrate; and

defect detecting means which detects a defect using the reference image and the inspection image obtained by sensing images of the areas with the image sending means;

wherein the defect detecting means comprises:

a brightness correction unit which corrects a difference of brightness between the reference image and the inspection image, which are obtained by sensing images of the areas with the image sensing means, in multiple stages by different area units;

a difference image generation unit which compares the images for which brightness is corrected in multiple stages by the brightness correction unit to find a difference image between both the images; and

a defect detection unit which compares the difference image found by the difference image generation unit with a threshold value corresponding to the areas of the images to detect a defect.

12. An apparatus for inspecting a pattern according to claim 11,

wherein the brightness correction unit performs the correction of brightness in multiple stages by changing a size of a unit area for which brightness correction is performed on the images.

13. An apparatus for inspecting a pattern according to claim

11,

wherein the inspection means further comprises a positional deviation correction unit which corrects a positional deviation between the reference image and the inspection image obtained by sensing images of the areas with the image sensing means, and corrects a difference of brightness between corresponding parts of the reference image and the inspection image, for which positional deviation is corrected by the positional deviation correction unit, in multiple stages by different area units in the brightness correction unit.

14. An apparatus for inspecting a pattern according to claim 11,

wherein the defect detection unit uses a threshold value corresponding to a difference of partial brightness of the images as the threshold value according to the areas of the images.

15. An apparatus for inspecting a pattern, comprising:

image sensing means which sequentially senses images of corresponding areas of two patterns, which are originally formed so as to have an identical shape on a substrate, using an image sensor to sequentially capture images of the corresponding areas; and

defect detecting means which processes the images sequentially captured by the image sensing means to detect a defect,

wherein the defect detecting means comprises plural

processing units for processing the images, which are sequentially captured by sensing images of the areas with the image sensor of the image sensing means, and executes correction of positional deviation, correction of brightness, and detection of a defect of the images, which are sequentially captured, in parallel in plural processing units to thereby process the images at a processing speed substantially equal to an image capturing speed of the image sensor of the image sensing means.

16. An apparatus for inspecting a pattern according to claim 15,

wherein the defect detecting means processes the images at the speed in the range of 1.6 Gpps to 6.4 Gpps.

17. An apparatus for inspecting a pattern according to claim 15,

wherein the image sensor of the image sensing means is a TDI image sensor of a parallel output type.